

BAE SYSTEMS

Signals Intelligence **SIGINT**

Own the spectrum. Win the first battle.



baesystems.com/SIGINT

Photo courtesy of U.S. Air Force.



■ Focus on the Mission

The future operational environment is uncertain and complex, evolving faster than ever before. Peer and near-peer adversaries threaten to influence the battlefield by exploiting the radio frequency spectrum across all phases and domains of battle. Our ability to seize, retain, and exploit the spectrum is critical to battlefield superiority.

We must win the first battle—the battle for the electromagnetic spectrum.

BAE Systems' adaptive signals intelligence, or SIGINT, products are software defined and open architecture, allowing the warfighter to address these emerging and dynamic threats.

We have:

- More than 20 years of software-defined open architecture SIGINT development.
- More than 100,000 operational hours on our systems.
- Eclipse RF™ receivers on more than 70 percent of U.S. intelligence, surveillance, and reconnaissance platforms.
- Export approved variants to support international customers.
- Integrated more than 15 third party applications to date.
- A highly trained field service engineering and product support team.



Unmanned SIGINT/ Electronic Warfare

In a single system, BAE Systems' unmanned SIGINT/EW products detect, identify, locate, copy, track, and jam communication and non-communication emitters. The software-defined open architecture product base runs multiple simultaneous signal types and mission functions in just one software load. The products also provide flexible integration options through podded and inboard system configurations.

- Our **universal podded calibration** enables customers to calibrate one pod/platform combination and transfer that calibration to any other pod/platform of the same model, drastically reducing calibration time and cost.
- Our **instantaneous geolocation** technology enables high-confidence grids to be generated on target and non-target signals more than 100 times faster than competing techniques.
- Our sensors are controlled through a single ground work station connected via encrypted tunnel over the existing platform command and control data link. The ground control work station operates in two configurations:
 1. Expeditionary mode—deployed forward with the platform ground control station.
 2. Remotely over a back haul network as part of the Distributed Common Ground Station (DCGS) architecture.

Compatible unmanned platforms include:

MQ-1C Gray Eagle
MQ-1C ER Gray Eagle
MQ-9 Reaper
MQ-8B Fire Scout
RQ-7B Shadow
RQ-21 Blackjack
ScanEagle
Other

Key features:

- Multi-function SIGINT/EW in a single system.
- Supports multiple simultaneous signal types in a single system.
- Universal podded calibration.
- Instantaneous geolocation.
- Supports national to tactical integration.
- Export approved international variants.



Airborne SIGINT and Electronic Support

BAE Systems' airborne SIGINT systems detect, identify, locate, and track communication and noncommunication emitters to provide full-spectrum awareness and actionable intelligence to national and tactical users.

- Our **liquid-cooled sensor** configurations enable high altitude operation in extreme environmental conditions.
- Our **rack-mounded sensor** configurations enable efficient operation with on-board sensor operators and rapid platform reconfiguration.
- Our **modular podded sensor** configurations mount under the aircraft wing for even further mission flexibility.
- Our software-defined architecture provides the versatility needed to support an array of mission profiles and integration with existing and future intelligence and electronic warfare assets.

To date, we integrate with and operate on a wide range of tactical medium-altitude and strategic high-altitude airborne platforms. Our systems incorporate advanced signal exploitation techniques to operate against the most advanced communication and non-communication threats.

Compatible medium altitude platforms:

MC-12 Liberty
DHC-6, 7, and 8
EC-130
EO-5C
EC-37B (G550)
Twin Otter
Caravan
Air Tractor
Other

Compatible high altitude platforms:

P-8 Poseidon
E-7 Wedgetail
U-2 Dragon Lady
RQ-4 Global Hawk (Eclipse receivers)
Other

Key features:

- **Deep look SIGINT** enables operation in contested and denied environments.
- **RF machine learning** enable operation against unknown agile threats.
- Real time in-flight reconfiguration ensures instant response as mission needs evolve.
- Rapid insertion of third-party applications offers flexibility to tailor system performance to mission needs.
- Supports on-board and remote operator interface and control.
- Open Mission Systems (OMS) compatible.



■ Maritime SIGINT

BAE Systems has a long history of providing cutting-edge SIGINT capabilities to the U.S. Navy. We leverage our experience and integration know-how with specific capabilities in use across the DoD to provide the Navy with the lowest risk solution. Our modular, scalable SIGINT architecture is based on the latest commercial open standards and is fully software defined. This architecture eliminates vendor lock, supports low risk modular subsystem upgrades, and enables rapid insertion of third party signal exploitation applications operating in their native framework. With this software-based solution, we eliminate the need for timely and costly integration of roll-on roll-off sensors and replace them with software applications. We also enable secure development operations (SEC DEV OPS) where new prototype capability can be integrated and tested in an operational environment at low cost and low risk.

Our SIGINT architecture enables users to mitigate and keep pace with adversaries' evolving signal threats.

Key features:

- Proven experience integrating SIGINT systems with Command and Control Combat systems architectures.
 - RF signal server enables simultaneous prosecution of threat signals.
 - Analytics framework support on-ship fusion of national sensor data with the tactical threat picture.
 - Modular architecture eliminates vendor lock.
-



■ Eclipse RF™ Products

Eclipse RF™ manufactures dependable, high-performance commercial off-the-shelf (COTS) products used in many of the world's most sophisticated SIGINT systems. As a supplier to the industry for more than 25 years, we have delivered thousands of products to our customers for use in applications such as signal search, copy, beamforming, direction-finding, and geolocation.

Our products adhere to open standards, designed to address customers' needs of affordability, versatility, and capabilities in the delivery of sensor systems.

Eclipse RF™ products fall into the following categories:

1. Receivers, transmitters, and transceivers—embedded software-defined modules for the reception or transmission of signals of interest
2. Timing references—GPS disciplined precision timing modules, which provide a stable and highly accurate time base for interferometry and multiplatform timing
3. RF distribution—modules which selectively connect antennas to receiver inputs and transmitter outputs
4. Integrated hardware suites—complete turn-key hardware sub-systems for application developers

Key features:

- Reliability.
 - High dynamic range.
 - High sensitivity.
 - Low phase noise.
 - Fast tuning.
 - Optimized size, weight, and power profiles.
-



■ Rapid Capability Development

BAE Systems' deep bench of technical subject matter experts, applications engineers, and operators enable rapid capability development and deployment support for our customers through the life-cycle of our products and programs. We have a proven track record of taking capabilities **from concept to deployment in less than six months.**

Engineering services:

- System architecture development.
- Signal analysis, protocol exploitation, and advanced technique development.
- Modeling simulation and operational analysis.
- Applications engineering and rapid prototyping.
- Platform integration.
- Field test support.
- Operational deployment support (field service engineering, operations, and maintenance).



■ Own the Spectrum

BAE Systems' adaptive SIGINT systems exploit the spectrum and provide a decisive advantage. Founded on software-defined, commercial, open standards, our SIGINT/EW systems host the newest and most advanced capabilities in the industry.

Our technology enhances mission effectiveness by dominating and maintaining an asymmetric battlespace advantage to ensure we win the first battle.

For more information contact:

Dave Bissonnette
BAE Systems
65 River Road
Hudson, NH 03051

M: 603 320 5633

W: www.baesystems.com

Cleared for open publication on 01/20

ES-C4ISR-123019-0267

Disclaimer and copyright

This document gives only a general description of the product(s) and service(s) and, except where expressly provided otherwise, shall not form any part of any contract. From time to time, changes may be made in the products or the conditions of supply.

BAE SYSTEMS is a registered trademark of BAE Systems plc.
©2020 BAE Systems. All rights reserved.

CS-18-G45